432 MHz AND ABOVE EME NEWS

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CONDITIONS

There was an awful lot of stuff going on this month! The 1st 24 GHz EME QSO seems imminent. W5LUA is copying his own echoes and was copied by VE4MA - see their reports. The SETI League succeeded in its first calibration tests with Arecibo. There beacon signal (W2ETI) was detected along with those of other participating 23 cm EME stations. They express thanks to the EME community for keeping off the beacon frequency and supporting the test by providing additional signals for comparison. The microwave EME activity continues to grow - particularly on 6 cm. Strong support for the universal use of circular pol on the microwave EME band, approve at the RIO2000 EME Conference, is expressed through out this issue. In April the 1st part of the DUBUS/REF EME Contest takes place on 432, 13 and 6 cm. (10 GHz is in the 2nd part).

SSB CONTEST

A few more SSB Contest scores have been received, but none have moved HB9Q from 1st place with 550 points. Dan is thus declared the 2001 winner and will be sent the coveted framed contest certificate. K0YW has moved in to 2nd place with 495 points pushing G4CCH to 3rd place with 440 points. Congratulations to the winner and to all who participated, who are the real winners.

AL7OB

Mike had an unrepairable failure of his temporary azimuth drive set up during the March SW. This caused him to miss his 70 cm skeds with G4YTL and DK3WG. Mike has parts on order for a permanent replacement, and expects to be ready for DUBUS/REF Contest. Before the failure he QSO'd ON5OF (559/559) for initial #67, DJ3FI (549/449) #68, KU4F (559/559) #69, KAØRYT (449/559), JA6AHB (549/549), HB9Q (549/549), DL9NDD (569/569) and VK4AFL (449/549). Mike notes that he is still trying to get the hang of polarity rotation.

DL6LAU

Carsten has a number of 2 - 7 GHz 200 W TWTs that he is willing to share -- On a business trip, I found 12 C-band TWTs at what seemed a good price. They should give at least 200 W out for 20 mW in on 13 cm, 9cm and 6 cm. So if

anyone is interested in one of these TWTs, please let me know. If interest is good enough, I will also offer to build the needed power supply. (You need three different voltages: Heater 6.3 V at 2.1 A, Collector 2750 V at 400 mA and Helix 4400 V at 10 mA. The RF input is a SMA female and the output is an LC female connector - one is included with the tube). My e-mail is Carsten

G3LTF

Peter says he has little this month because was away on holiday for both the Feb and March weekends, but he did include some FB technical material -- We had a nice visit from Guenter, DL4MEA and Ian G3SEK in Feb with lots of interesting discussion about 23 cm. The only QSO was on 3 March SM3AKW (O/O) on 2304/2320 for initial # 16.

G4RGK

Dave is QRV on 70 cm again -- I finally managed to get everything fixed and working properly. One of the tube baluns needed completely remaking along with a set of open wire lines. I spent 4 hours is the machine shop. During the first evening of SW the WX was very bad. Minus degs C. Everything was frozen and it took 2 hours with a blow lamp to unfreeze the array. I was hearing good signals from AL7OB until it all froze up again at about 10 degs before moonset. The next evening the WX had improved with overcast skies, but the temp was above freezing. I had a good time and worked HB9Q for an initial and some old friends: SM2CEW, K1FO, K4QI, K2UYH and K0RZ. I also heard PA4FP, SM3AKW and ON5OF. They were working others and I never did find them calling CQ. I can't call CQ because my tubes are pretty sick and I don't want to over stress them. I am still working on a new PA. The power supply is being build now, but I have very little spare time these days. It could be the end of the year before I get it finished.

G4YTL

Dave is new on 432 EME (already at initial #41) and concerned about receiving QSLs -- I have just sent out 30 cards for recent 432 EME activity. I hear rumors that there is some difficulty getting QSL cards back from the 432 EME community. QSLing is a pain, but serves some useful purposes. For myself, the only reason for collecting cards is in order to apply for RSGB awards. This is not just for self- gratification. Publication of such achievements in the national radio magazine interests newcomers into the hobby, and hopefully will attract the next generation of moonbouncers and VHF/UHF experimenters. I understand that some people do not wish to go through the expense of printing cards. All they need to do is write a brief note, even on the back of the QSL card they have received, and return it to the requestor. The vital information is: Callsigns of both stations, date and time of QSO, frequency, signal report, and locator (this is often omitted even from printed QSL cards) - it should also be signed. With all of

the cards that I have sent out I have included a self-addressed envelope and, depending on the country, a $ bill or IRC. So, all that is required is two minutes of the operators time. Like many others, I will welcome the day when e-QSLs are acceptable. Perhaps in a month I should publish details of the return rate?

GW3XYW

Stu was on 23 cm in March, but plans to return to 13 cm in April -- Signals were quite strong and activity was moderate. Stations worked on 23 cm EME were as follows: On 3 March G4CCH, SM2CEW, HA5SHF, OH2DG, W2UHI, K5JL, OZ4MM and W7SZ - all on CW, and on 4 March F1ANH, F2TU on SSB, G4CCH on SSB, OZ4MM, DJ5MN, WA1JOF and KA0Y. Please note that my E-mail address is now GW3XYW

HB9BBD

Dominique says its a long time since my last EME report -- I am still alive, but there has been little chance time wise to be on the moon. In the ARRL Contest I was only able to participate the 2nd weekend. I was unable to be QRV for the SSB contest at all. The system is working fine. I am also still working on my 32 m dish project - time is working for me there. I will improve my moon presence in the future - promised!

HB9Q

Dan was able to be QRV for a short on 432 - I did work the following stations on 3 March (all on random) AL7OB (549/549), UA9FAD (529/429), RA3LE (429/559), SM3AKW (539/559), VK4AFL (52/53) - real Q5 on SSB!, SM2CEW (539/559), JR1RCH (429/559), JH4JLV (529/559), I5CTE (429/559), G3HUL (529/559) and G4RGK (529/559) to bring us to initial #114. We have changed our feed system. However, we did not get the results we were expecting. We hope to improve our RX before the Eur EME Contest at the end of March.

HP3XUG/KG6UH

Louis reports that HP3XUG is QRT. He is moving to KH6. Louis has taken a 3-5 year position as manager of Windjammer Cruises in Maui. He will return to HP twice a year for 6 weeks at a time, but the present home QTH is being relinquished and it is unlikely that he will be QRV on the moon from HP in the next few years. After the period in KH6, Louis plans to return and establish a new home in HP. Thereafter, he hope to get back on EME in earnest - maybe from a real retirement. He can best be reached at Louis, HP3XUG/KG6UH

IK2MMB

Sergio is frustrated by locally generated QRM that may force him off 1296 EME -- I am sorry to announce that I may be off EME on 23 cm for a while. How long is not clear. The reason is that someone has activated an FM-TV transmitter for surveillance purposes at 1295.7 MHz. Being an ATVer too, I can see a nice

building on my monitor instead of signals bouncing off the moon. Even if this illegal TX it is located 30 km away, because of my hilltop QTH the signal comes in very strong. 1296 is now S9+20 noise almost wherever I turn the knob and the antenna. I am trying to locate the source, but I have no hope of getting rid of this problem in a short time.

K0YW

Bruce has sent in his log for the SSB Contest. He QSO'd on 2 March at 2150 OE9ERC (56/56) JN, 2152 G4CCH (56/57) IO, 2158 HB9Q (57/55) JN, 2159 K2UYH (55/55) FN, 2200 N2IQ (56/56) FN, 2202 K5JL (57/57) EM, 2203 K2DH (56/58) FN, 2204 KA0Y (56/57) EN, 2206 I0UGB (55/55) JN, 2216 LX1DB (57/57) JN, 2218 W2UHI (56/57) EN, 2220 GW3XYW (55/55) IO, 2223 KD5FZX (55/55) EM, 2226 WA90UU (56/55) EM, F2TU (44/55) JN, 2230 VE6TA (54/55) DO, 2243 VE6NA (449/55) DO CW-SSB, 2253 OK1KIR (44/54) JN, 2304 W7BBM (539/55) DM CW-SSB, 2309 K4QI (56/56) FM, 2315 W7SZ (539/53) partial and 2348 OZ6OL (55/56) JO, and 3 March at 0020 W5LUA (56/56) EM and))25 W7SZ (44/55) CN for a score of (22x2+1)x11 = 495 points. His 9.2 m dish is seeing 0.7 dB moon noise and 23.8 to 24.5 dB of sun noise at a flux of 175. Bruce has modified his TS-2000 for split RX/TX on 2 and 432 and has a written up the modification.

KL7HFQ

Roger during the March SW had a partial with WB0GGM and QSO'd K4QIF (549/549) and K1FO (449/549). Roger is interested in skeds and can be reached by email at KL7HFQ

LX1DB

Willie wants to express his support for circular pol on microwave EME -- I am in full support of the use of circular polarization. I have been circular on all bands, including 5.6 GHz, from the very beginning. The IARU standard is on one side, but the results are on the other. Amateur radio is partially experimental. We strive for the top technology. This is especially the case on EME. I employ the polarity (or any other technique) that gives the best results!

N1BUG

Paul continues to look for 70 cm moon rise/set skeds. With a single 22 el yagi and 550 W he has thus far worked K1FO, DL9KR, SM2CEW and DL4MEA. Paul has heard PA3CSG, HB9Q, OH2PO and DL9NDD. His email is . Paul hopes to have elevation in operation for the REF/ DUBUS/REF Contest. His email is at: Paul, N1BUG

N4GJV

Ron reports that his old junk box EME station is still working, and that he is still QRV on 432, although not as active as he was in past years. Ron is still interested in skeds and can be reached via e-mail at:

Ron, N4GJV

He QSO'd I5CTE in Jan, and G4YTL and EA8FF in Feb. In March he wasn't able to be QRV for his RW3PF sked, had a good QSO with PA4FP, but only a partial with DL5LF (M/-). Heavy rain degraded the performance of Ron's array and the pol alignment seemed poor.

OE9XXI

Peter's EME Report -- On 3/4 March on 2300 I made contacts with OE9ERC (579/579), OK1UWA (549/559), OZ4MM (569/579), SM3AKW (559/569), WA6PY (549/559), WA8WZG (549/559), W5LUA (55/55) on SSB, F2TU (54/54) and LX1DB (56/56) on SSB. On 6 March I added a nice OSO also on 2300 with Carsten, DL6LAU (559/559) and on SSB for initial #59.

OK1KIR

Vladimir reports that his group during the March SW QSO'd on 2304 on 2 March at 2101 WA6PY (M/O) initial #40, US state 10 (CA) and our ODX of 9625 km, and on 3 March on 5760 MHz at 1652 F2TU (549/539) and (33) on SSB, 1748 F1ANH (O/O) and 2125 OE9ERC (559/559). We also heard SM4DNH (O) 6 cm. He seemed to be on the opposite circular pol sense. We definitely support the use of circular pol on the microwave bands. We have no other option as we have been using a polar mount for more than 20 years. Our 6 cm Moon noise was 1.2 dB and G/CS noise 4.3 dB (heavily clouds). In the first part of DUBUS contest we plan to operate 13 cm on Saturday and 6 cm on Sunday.

OZ4MM

Stig was mainly active on 1296 during the March SW, but will be QRV in the 1st part of the DUBUS Contest on 432 and 2304 - I worked on 3 March on 1296 W2UHI (569/589), K5JL (559/579), W7BBM (429/559), GW3XYW (559/569), W7SZ (539/549), LU8EDR (439/569) and HA5SHF (429/549), then switched to 2304 and found OK1UWA (439/559) for initial #35, OE9XXI (579/569), W5LUA (559/559) and WA9OUU (549/549) #36. On Sunday I was only QRV a little and worked again on 1296 GW3XYW (559/569) and DJ5MN (549/579). The 1st day I had readout problems due to heavy icing on the dish, but I was able to fix things by some dish climbing during the night.

PA4PF

Frank has improved his 432 system - I did a lot of work to be QRV for the March SW. I changed cable from Aircom to 7/8 Flexwell. This change gave much more power at the feedpoint causing my TR relay to burn out and my preamps to go QRT. I then replaced the relay with a new one and repaired the preamp. I also made some changes to my dipoles. During the SW I QSO'd DJ3FI (O/O), W1ZX (O/O) - FB signal, N4GJV (O/O), K0RZ (M/O), partial EA3DXU -he received me but nil from him, nil KD4LT, nil AL7OB - not QRV, partial WB0GGM - he received me and partial N1BUG - he received me with only one yagi! Conditions

where very variable. Most of the time signals where very weak. I'm also working on a 23 and 13 cm EME. Does anyone have a good idea on how to switch between bands. I'm also QRV for skeds at Frank, PA4PF

RW1AW

Alex sends the following list of USA stations (via DK3WG) he has QSO'd on 70 cm EME: K5JL, W7CNK, N9AB, K2UYH, K1FO, WA9FWD, KA0RYT, W7HAH, WE2Y, KB4CNI, W7SZ, W7QX, N2IQU, K5GW, N4GJV, K5WXN, NC1I, K0RZ, K4AR, WB0GGM, K4QI, N3FA, W2WD, KA0Y, K8UC and K5AZU for a total of 26 calls. He QSLs 100% and notes that he is awaiting QSLs from K5JL, W7CNK, N9AB, K1FO, KA0RYT, KB4CNI, W7SZ, W7QX, N2IQU, K5GW, N4GJV, K5WXN, NC1I, K4QI, W2WD, K8UC and K5AZU. Cards can be sent to his QSL manager Jurgen Fiedler, DK3WG, P.O. Box 1531, 15205 Frankfurt Oder, Germany. Alex can also be reached by e-mail at Alex, RW1AW

S57UUU

Marko writes -- I'm afraid the numbers mentioned in the March NL were somewhat out of context, so I would like to add some additional comments about polarization. The numbers mentioned were a part of my answer to an article in DUBUS by WA5WJB where he wrote that circular pol will have at least 0.5 dB of loss which would degrade S/N by 1.4 dB. So I wrote: a) 1.4 dB is less than the AVERAGE loss incurred by geometry, b) With realistic values for NF and moon noise 0.5 dB of loss gives only 0.9 dB of S/N reduction, and c) one can get circular pol with much less than 0.5 dB of loss - a typical number would be 0.1 dB or less. As for the RHCP/LHCP, every one of the three solutions that I mentioned in Rio (linear ortho+polarizer, septum polarizer and dual feedhorns) provide both ports. In my system with dual feedhorns, I do not use a separate preamp protection relay. I run 50-65 W and have never yet (knock on wood) fried the preamp. You need more than 100 mW to burnout a HEMT. I agree that an additional relay would provide better peace of mind. In the case of a WG RX port, a simple E-short could be inserted by a solenoid for RX protection. Note that the situation is different on 70 cm, where you need a big ratio impedance transformation to the high Z HEMT. This works as a voltage step-up, so you can fry the HEMT with much lower power. Theoretically, one can avoid the geometry losses by rotating the linear feed, but in practice this is often impossible. I have rectangular waveguide between my TWTA and the feed. I would have to rotate the whole TWTA, dish and all. The TWTA is mounted on one of the feed support legs. A TVRO 'polarotor' would be a solution, but very probably lossier than a good circular polarizer. I'm also not sure how it would tolerate the watts. If you have WG TWT and coax preamp, I can imagine a linear orthomode coupler having one coax and one WG port. I'll try to make one and publish the results. My favorite idea is to use Ku-band TVRO stuff (WR-75) that is cheap and abundant (at least here in Eur) - I have bought some orthos, LNB's and

feedhorns even at the local 'general' (non-HAM) flea market. I think the EME conferences are among the best places to decide upon things like polarization, because one seldom gets such a favorable active EMEers/Bureaucrats ratio.

S57UUU WeB Page

S59DCD

Rajko (S54X) reports that his group is finally preparing for operation on 13 cm -- We have an XVERTER and a little PA of 6 W. Probably this will not be enough for a QSO. So we are looking for a bigger amp, maybe just a little bit more than 50 W. Can somebody help us?

VE4MA

Barry has copied W5LUA on 24 GHz - At about 0430 on 10 March the 24 GHz EME signals of W5LUA were heard. Signals were weak at both ends. Al's signal here was (T-M) copy. I am using an 8' offset dish with a "large" diameter W2IMU feed into a DB6NT preamp at 1.55 dB NF. I see 15 dB on Sun noise and 2.3 dB of moon noise. I had no visual moon because of clouds, but this does not appear to have affected the moon noise. The beamwidth of the antenna appeared to be slightly less critical with clouds than with clear sky. The WX here was about -1 deg C (warm spell!) and about 80% humidity with snow expected overnight... And now to make a QSO! I also want to express my support for the move to Circular pol on 5.7 and 10 GHz EME. It does add a little complexity, but with the more widespread activity appearing on these bands, polarity error is becoming a real problem and QSOs are being missed. Linear pol should go the way of the dinosaur and we should all move to circular.

VK4AFL

Trevor (QG62oj) writes -- Conditions over the last month have been good whenever I have been on with signals as solid as I have ever heard. Recent initials are KJ7F, K4EME and W4ZRZ plus a Q5 SSB QSO with HB9Q. AL7OB, ON5OF, RA3LE and UA6LGH were worked again with good signals. Attempts with N1BUG`s single yagi station have not resulted in a contact although signal traces have been observed at both ends. I thank Paul for his enthusiasm. I'm looking forward to the next contest. If current conditions can repeat themselves, it should be very good especially with cooperation from the northern winter.

W4WD

Warren wants everyone to know that he had hoped to be QRV on 432, but his FT-767GX developed a problem in the transmitter section. This year's unusual high snow level has not helped. Work on the polar mount has been slowed tremendously by the weather. As Yaesu's turn-around time is about 10 weeks, Warren is going to take a crack at fixing it to save time, and hopes to be back on soon.

W5LUA

Al reports his 1st lunar echoes on 24 GHz -- I was finally able to hear and record

my 1st EME echoes on 24,192.1 MHz at 0816 on 7 March. My antenna is a 3 m Andrews prime focus dish. According to Andrews, the dish is rated to 30 GHz with proper back structuring to optimize the dish's surface. The dish really began to perform when I added a back structure that looks like a tic-tac-toe board mounted to the backside of the dish. The eight points of the back structure allowed me to optimize the dish's surface by pushing or pulling on the back of the dish to enhance the accuracy of the dish's surface. The end result was improved sun and moon noise. I presently receive 12.5 dB of sun noise and 1.3 dB of moon noise. My feed is a scalar feed optimized per the "W1GHZ On-Line Antenna Handbook". My dish has an F/D of 0.3. My LNA is a 2 stage W5LUA homebrew design using a pair of Agilent Technologies PHEMT devices, which provide a 2.25 dB system NF. My basic transverter is built around surplus 23 GHz modules, which down-convert to a 2304 MHz IF that is then down-converted to a 144 MHz IF with a Down East Microwave transverter to an ICOM IC-271 transceiver. I was able to achieve about 20 W at 24192 MHz by re-tuning a Varian VTU- 6191 (14.5 GHz) TWTA that I have been using on 10 GHz EME at about 80 W output. Re-tuning consisted of lowering the Helix voltage and doing some tuning in the output waveguide section. I was using Mike Owen's Realtrak Software to track the moon. I was concerned about the accuracy of the Doppler calculation of the various moon tracking programs, which I have used in the past. With an expected Doppler of up to 50 kHz, there is not a lot of margin for error when tuning for echoes. I ran some echo tests on 10368 MHz and came to the conclusion that Mike's software was the most accurate at 10368 MHz. I therefore placed my confidence in his software at 24192 MHz. Based on the Doppler shift of the received echoes, I believe Mike's software predicted the returns within a few hundred Hz. On the evening of 6 March, I had just installed my elevation rotator, which allowed me to remotely operate the dish from the hamshack. Previous attempts at echoes were with all the equipment mounted in a shed near the dish. I had tried for echoes prior to zenith, but only thought I had heard echoes. Some clouds were beginning to cover the moon, so I decided to set my alarm clock for about 2 AM (LST) and give it a shot on the setting moon. The 1st discernable echoes were heard at 0816 with the moon at an azimuth of 268.8 degs and an elevation of 38.8 degs. The Doppler shift at this time was a negative 45.3 kHz. Echoes peaked very well at 0848 where the elevation was down to 31.5 degs and the Doppler shift was a negative 49.1 kHz. At this point, I ran out of azimuth control with my present set-up. My lunar echoes peaked Q5 (M copy) in a 2 kHz bandwidth and were easily identifiable on AF9Y's DSP software. This triumphant event came after several years of optimizing the system and many failed attempts at achieving lunar echoes. I was rather surprised to find that the echoes did not seem to be much broader than my 10 GHz echoes, maybe due to the 0.3 deg beam-width of my dish. More info including the AF9Y .gif files will be posted on the North Texas Microwave Society WEB page at:

NTMWS's WEB Page

Now to make a QSO!

W6HD

Tay send news that he is just about QRV on 10 GHz -- I have the 10' dish tracking with my absolute US Digital encoders and the PIC emulation of FIEHN's board that Rex Allers KK6MK has done and will present at Microwave Update in San Jose. Results so far include 14 dB of sun noise and just over 1 dB of moon noise. The GR 1296 should be on line in a week or so for "accurate" results. Now I have to get up the guts to put the 20 W TWTA on line and make some 10 GHz skeds! My new email address is: Tay, W6HD

W7ZX

Larry's March SW activity was limited to one day due to high winds - I worked 9 stations with 1 initial. They were G4CCH, OZ4MM - really strong, GW3XYW for an initial (#), W2UHI, W5ULA, KA0Y, DJ9YW, WA4JNP and W7QX. Also QSO'd on "true QRP" (both stations using < 5 W at the feed) on 23 cm was W7LHL on 25 Feb. [How can we broaden this type of operation to other stations?] We were again using the DSP-10 in FSK mode.

Details are on the DSP-10 WEB page

I have now removed the 23 cm feed from my 12' dish in favor of 3 cm operation. Initial sun noise at 10,368 GHz is about 10 dB. I still need some TX power.

WA6PY

Paul was on 13 cm on 2-4 March -- I QSO'd in skeds OK1KIR, WA8WZG, F2TU, LX1DB, OE9ERC and OE9XXI (crossband on 2320 MHz). Heard very loud was OZ4MM. I am now up to initial #10 on 13 cm and #26 on 23 cm. On 30 April/1 May I will be QRV on 10 GHz if my old equipment is still working. I am not sure if I will be QRV for Arecibo SETI test. I have additional 13 cm skeds with JA8IAD on 10 and 11 March. At present changing the feed and equipment takes several hours. I am afraid that without sun noise measurements, I will not be able to optimize my 13 cm system for this sked. I am interested in 10 GHz for the April SW. My e-mail is Paul, WA6PY

ZS6AXT

Ivo is having Sciatica problems and will be out of operation for at least 3 weeks. This will mean that Ivo will miss the microwave part of DUBUS/REF Contest. [I know this problem well and I hope it never returns! The pain is terrible. I thus have great sympathy for Ivo's plight and hope he is back to normal very soon.] Despite his ache, Ivo still found the energy to make the case for using circular pol on the microwave bands -- I was a bit alarmed with some of the comments on circular vs. linear pol. Thanks to the horn designs from the late W2IMU and others like VE4MA we have today virtually problem free operation in the 23 and

13 cm bands. My 1st 7 QSOs in the 6 cm band were, however, not without problems, sometimes only after many tests, thanks to the linear pol I was using. Either weak or no signals were often heard, mostly with bad frequency spreading. (Why I never noticed any frequency spreading in my 140 QSOs on 13 cm, which is about half the 6 cm frequency, was not at first clear.) I suspected the problem was related to my linear polarization. So I scaled down the W2IMU feedhorn, aligned it for SWR and circularity. It's position in the feed is not yet fully optimized, but results have been very encouraging - in 5 QSOs with 4 stations no frequency spreading was observed, although Peter and Reinhilde were using still linear pol, while F2TU and F1ANH have circular pol horns, similar to mine. All of these QSOs were done on the 1st skeds! I agree that this is not 100% conclusive and more tests will be necessary to prove that circular pol eliminates or at least reduces frequency spreading. In all of the above QSOs I used a 200 Hz AF filter without problems. The 2nd problem with the linear pol is the polarization offset. Only after fiddling with it, did I manage to make it with some stations. I think that signals were still much below the level they should be. Imagine doing that in the contest! Circular pol gives optimum result with all stations (even if the other is using linear, with 3 dB loss of course). It is clear that it is no big problem to build a circular pol horn for the 6 cm band. It is not much work and the final result is certainly worth the effort! Today there are close to 10 stations with circular pol on this band. I am pretty sure that the others will join or be at a disadvantage. Radio Amateurs are well known for their ingenuity in solving problems. I am sure that we have in our ranks some who have practical ideas how to make such arrangement also for 3 cm. Since we are progressive, we should be not limited by IARU standards. Such standards should follow the evolution of experience and requirements of the ACTIVE amateurs. ALL of the EME guys active on these bands should voice their opinion on this subject. I am sure that circular pol will win, like it did in Rio! A 5 year old standard is certainly - OLD. I am circular on 6 cm and will keep it this way. I hope that by the time I finish my 3 cm there will be some good solutions for this band too.

K2UYH

I had problems on 432 on 3 March. I had excellent echoes at the start of operation, but heard nil during my sked at 2000 with RW3PF. When I checked my echoes repeatedly none were heard. I final changed the preamp even though its noise level was normal. This returned echoes and other signals. I worked at 2150 G3HUL (449/449), 2200 nil DL5LF - but there was a terrible birdie right on the sked frequency, 2230 ON5OF (569/559), 2245 UA6LGH (559/569), 2258 EA3DXU (449/539), 2311 K4QI (569/559), 2334 SM3AKW (559/559) and 2353 G4RGK (549/559). The next day I switched to 1296 and QSO at 2117 W2UHI (55/55) on SSB, 2128 G3LQR (559/559), 2146 KA0Y (559/559), 2204 G4CCH (55/55), 2301 W5ORH (559/569) - same as K5JL, 2309 G4CCH (55/55) on SSB, 2318 WA4NJP (549/559), 2332 OZ6OL (559/559), 2343 DJ9YW (559/559) and

(45/55) on SSB, 2358 SM2CEW (559/559), 0028 W7QX (449/449) and 0030 QRZ - very frustrating as I could not pull out the call despite a reasonable signal level... I think it may have been WA8ZWG. Conditions did not seem particularly good. I also CWNR HB9BCD and heard F1OAT.

NETNEWS

by

G4RGK, DAVID DIBLEY

WD5AGO is rebuilding his system for 23 cm and adding 6 cm EME. Tommy hopes to be QRV again in the spring.

W7GBI is working on his 6 cm EME system, but he is not yet QRV.

RW3BP is working on a 6 cm EME station using a 2.4 offset dish, but is not yet QRV. Sergey hopes to be operational this summer.

EA3DXU also has a new email address EA3DXU

W2UHI did a demo for some visitors and could hear S-3 echoes at new moon with only 6 degs offset from the sun. Frank's sun noise is 18.6 dB with the solar flux at 160 on his 18' dish. He is seeing about 0.2 dB of moon noise on 23 cm.

W4RDI had a power supply problem - just a broken fuse holder.

K9BCT is now QRT on 1296. He has sold his 23 cm PA to W4SC, who has a 12' dish.

W4SC in NC is working on 23 cm EME. Ben has a 12' dish and feed, an IC970 with a 23 cm module, and now K9BCT's PA.

W4TJ has picked up K3AX,s dish and hopes to be QRV again by the end of the spring.

W5ZN is working on his 70 cm array.

PA3CSG working on DSP receiver system. [Will it be compatible with W7SZ's system?]

LX1DB is now QRV on both 13 and 6 cm.

W7MEM hopes to become QRV on 432 during March.

WA4NJP is still looking for 222 EME skeds. Ray believes he is all up to date on 432 and 23 cm QSLs. If anyone needs one, let him know.

W8TN hopes to get back on moon. CT1DMK will be on 70 cm for the DUBUS/REF Contest and will QSY to the microwave bands later in spring.

KA0RYT is QRV on 70 cm again with his 8x 24 yagi array. Echoes were heard (549). His old 4 yagi array is still up, but when he took the cables off the antennas, he discovered lots of water in the connectors.

9H1ES is working on 10 GHz, but is not yet QRV.

W7CNK now has a TS-2000. During March Lucky worked EA8FF and K1FO on 432.

WA9FWD is re-doing his shack. John is QRV on 23 cm only. 13 cm is still in limbo.

WA1JOF is making progress on a 6 tube PA for 1296.

K5JL operated on 23 cm during the March SW under his 2nd call W5ORH. Jay is seeing 0.6 to 0.8 dB of moon noise and about 0.5dB less sun noise than K0YW.

K2DH needs info from CT1DMK about his PROMs.

AL7EB is working towards 23 and 3 cm EME and just might make it on for the contest. Mike has an XCEL spreadsheet for calculating G/T ratios on the SETI League WEB site.

UA3PTW has lost his 2 yagi array for 432 EME - [see picture in the last NL - he also lost the 2 m yagis shown] and is building a 8 yagi replacement. He hopes to have it completed in time for the contest.

SM4IVE report no progress yet on his new dish.

W7QX reports that his and W7BBMs signals were copied by Arecibo during the SETI tests about 10 dB above their noise floor.

FOR SALE

DL6LAU has several S/C band TWTs available for sale. See his report.

DD1XF has preamps for 70 cm, 23 cm and 6 cm available. He also has a 6 cm phase shifter, a 9 cm isolator and FHX 35 and NE 326 HEMTs for sale. Contact Frank at DD1XF

DS Kennedy 28' Dishes -- A pair of 28' D.S. Kennedy Dishes, that are in FB surface condition, have become available. They are the Heavy Duty model with extra braces intended for 120 mph, off-shore "Texas Tower," oil drilling rigs. They are a slightly stronger version of the dish K2UYH has used for 25 years of EME. The location is in upper New York State. K2RIW was the person who originally removed them from 130' and 70' towers on Long Island. The surfaces have not been walked on. Each weighs about 1,800 pounds (total), of 6061-T6 aluminum, and consist of 8 equal-sized, disassembled pieces (on the ground), ready for transport. Condition -- Dish #1 is missing the 3/4 and 5/8 inch assembly bolts, and will require drilling and taping to remove some broken bolts from the Helicoil bolt holes. One of the 8 pieces of Dish #2 is missing ~ 6" of the perimeter knuckle assembly; the missing piece is available for the reconstruction. Price and Timing - - The "newest owner" is willing to sell them for "a couple" thousand dollars, each (a private, estate sale). The purchaser must be willing to arrange for the move within the next 2 months, or they will be sold for scrap aluminum. Contact -- Dick, K2RIW for more information.

N1RZ is searching for a 432 tube amp with more than 300 W output for EME. The higher the power the better. You can reach Tim at N1RZ

WD5AGO has for sale a Peter Dahl 110/220 input 1100/1200 volt out at 2.5 A cca, transformer. It is in a roll around 3' rack, with 2 80 uf 2000 V caps configured as a voltage doubler for 3200 V at 1.2 A, and a 110 V 20 A variac providing a variable output from 1600 to 3200 V - metered. The supply was used to power a 3CX100 amp (1400 V) and then a YL1050 (3200 V). All for $US325 or xformer for $US175. Contact Tommy at WD5AGO

KL7HFQ needs the service/maintenance manual for the Icom IC- 471A 432 MHz transceiver. Roger is also looking for an internal power supply IC-PS25 for the 471A. Reply to email at KL7HFQ

K2DH has an IC-1271A for sale.

WB0GGM is looking for an FT-221 and FT-301.

K0YW recommends a new moon calendar with lots of very useful info. Check your local bookstore (ISBN 1-55566-260-9) or call Johnson books in Boulder, CO 1-303-443-9766.

KA0RYT is looking for T/R relays.

TECHNICAL

IMPROVING GS9B 13 CM OPERATION
BY JOHN, WA9OUU

The GS9B tube will put out 150 W with 10 to 15 W drive on 2300. The DEM solid-state driver amp has no testing drift and was used. My test amps and the popular K9EK amp by Ed Krome all do about 18% efficiency. The main problem is tuning drift. Ed's design has a lot going for it construction wise with anode bypassing and cooling. Its overmode TE11 operation does not reduce efficiency and bandwidth is better than other TEM only mode amps. The standard loop output coupling shows two fields, one nearly touching the inner line and other at the outer cavity wall rotated 90 degs. Loading adjustments can be touchy and tuning interaction is high. Different output ideas were tried and a wire probe about .25 wavelength long works very well. A #16 copper wire with a 90 deg bend completed .44 inch out from the end of the supplied connector was used. The best position is centered between the inner and outer resonator lines. A filed notch where the connector collet ends will aid installation. When the length is correct, best loading will be at about 20 deg rotation from inline. Too short a length, peaks inline; and too long, peaks at large angles that could touch the outer wall. A bend length of 1.12 inches, tip to the connector center was used. This output adjustment allows easy over and under coupling with less tuning change affects. Slightly over coupled seems best, and lowering the drive to just reduce the power by 2% is good. Testing showed very little loading change was needed from 50 W to 150 W output operation. At 150 W out a tuning point can be found that holds steady. This was shown to Ed. It is more stable at any power level than previous GS9B 13 cm tests. Power up drift caused by internal tube changes is another area of many experiments. Grid heating and deformation was first tested with relay switching in the bias circuit and the anode high voltage line. On standby a positive grid bias voltage was applied of up to 15 volts and a grid current of 300 ma. This resulted in 4.5 W of grid dissipation. On key down, normal operation at 100 W output was tested. Initial drift time was not improved and at the 4.5 W level, it was longer. Power up drift causes the input and output circuits to both go lower in frequency indicating an increase in tube capacitance at both gaps. Just grid movement would not do this. Heater overvoltage during standby helped bring power up quicker and reduce input tuning drift to one set point. 14 to 14.5 volts during standby, dropping back to 12 to 12.5 volts keydown makes a noticeable improvement in operation. 15 volts is not better, and hours of overvoltage have not shown damage, but lots of cathode air is a good idea. Bias and resulting idle current tests shows that 30 to 50 ma is best. More or less current produces greater power up drift. A 20 volt zener diode is about right.

Tests using a variable bias adjustment showed that power up was helped by a low bias moving to 20 volts. Tests using a 20,000 to 30,000 mfd capacitor shunting the zener diode works well. A 20 ohm series resistor is used and a 300 ohm bleeder sets the discharge time. A solid-state dc-dc relay was added in series that is triggered by drive power. The desired affect is thus triggered by CW keying or SSB speech. This makes a noticeable improvement in operation. With these changes, power up time and stability have been improved. Tests with outputs of 100 W keydown, 160 W keyed for 50% duty and 160 W peak SSB were conducted while visiting Ed Krome. With the preset adjustments, power was at 65% to start and 85% in 2 seconds, going to 100% and staying above 90% long term. My use is for EME and now I hear short length echoes very well.

Peter, G3LTF included the following paper on inprovements for the VE4MA Feedhorn.

Text
Horn Drawning

FINAL

There was certainly no lack of EME happenings in March... 24 GHz EME, circular pol on 6 and 3 cm, DSP QSOs on 1296 with < 5 W. I don't expect the place to slow down in April with the DUBUS/REF Contest part I! Because of the contest there are not many skeds this month.

Technological changes also affects the NL. Scott, KD4LT would like to change the way the NL is distributed by email. He feels it is time to eliminate the text files and make the transition to .pdf format only. He notes that the Acrobat reader is a free download for all. If you have problems getting it, VE1ALQ can help. Darrell can be reached at:
VE1ALQ

W5ZN reports that EME contest logs received by the ARRL are posted on their WEB site. If you do not see your log, please let Joel know.

There are a couple of meeting coming up that should be of interest to EMEers: 1) The Southeastern VHF Society is pleased to invite you to their April 20-21, 2001 SVHFS Conference to be held in Nashville, TN at the Holiday Inn Select, Brentwood, Tennessee. See for further information and the 2001 SVHFS Conference registration form; 2) The annual Dayton Hamvention VHF Banquet is set for Friday night, 18 May from 6:30 PM until 11:00 PM at the Holiday Inn

North, Waggoner Ford Rd. Dayton, OH. The cost of a ticket, which includes the 2-entrée-banquet dinner, door prizes, etc. is only $35 per person. Tickets are limited to 125. You may order tickets by sending $35 plus an SASE to Tom Whitted, WA8WZG, 4641 Port Clinton East Rd., Port Clinton, OH 43452. Website info is at:

WA8WZG's WEB Site

or WA8WZG's email

Please keep the news and technical info coming. I hope I have not missed any important news. My e-mail went out on Friday evening and did not return until Monday morning. This has thrown my schedule off. The NL would have been in the mail already, if not for this problem.

I plan to be on 432 for the contest, but will be in Toulouse, France between 14 and 20 April for a communications satellite conference. I hope to meet with some of the EME community while over there... GL in the contest es

73, Al - K2UYH

EME Schedules

31 MARCH

Time	432.040	1296.050
0130z		VE6NA -WA4NJP
0200z	WB0GGM-KL7HFQ	KD5FZX-WA4NJP
0230z		JA6CZD-WA4NJP
1800z	WB0GGM-UA9FAD	
1830z	WB0GGM-YO2IS	KD4LT -F1PYR
1900z	K4EME -YO2IS	WA4NJP-IK2MMB
1930z		WA4NJP-I0UGB
2000z	KD4LT -G4YTL	WA4NJP-PA3DZL
2030z	KJ7F -S52CW	WA4NJP-ON5RR
2100z	KJ7F -ON5OF	WA4NJP-F1PYR
2130z	KJ7F -K4EME	WA4NJP-DL6LAU
2200z		W7QX -LU8EDR
2230z		WA4NJP-DF3RU
2300z		WA4NJP-F1ANH
2330z	K5WXN -K4EME	K0YW -LU8EDR

EME OPERATING PROCEDURES FOR 432 AND ABOVE BY G3SEK

Netnotes by K1RQG

This information was obtained from: Scott, KD4LT

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Rein, W6/PA0ZN

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